

REMARKS/ARGUMENTS

Favorable reconsideration and allowance of the present patent application are respectfully requested in view of the foregoing amendments and the following remarks. Claims 1-42 are pending in the application. Claims 1, 16, 32 and 42 are independent claims.

Allowable Subject Matter

Applicants note with appreciation the indication on page 12 of the 2/05/2010 Office Action that claims 6-9, 21-24 and 37-41 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, Applicants submit this is not necessary in view of the following remarks.

Bolin must also be removed because Bolin is not prior art

Applicants thank the Examiner for the removal of U.S. Patent No. 7,123,676 (“Gebara”) from rejections under 35 U.S.C. § 103(a) for reasons set forth in Applicants’ response of 11/11/2009. However, the Applicants note that the Examiner has sustained a 35 U.S.C. § 103(a) rejection based in part upon U.S. Patent No. 7,194,275 (“Bolin”).

However, as discussed on Page 10 of the 11/11/2009 response, Bolin is not prior art. In particular, Bolin was filed as a non-provisional application on September 30, 2004, and claims priority to U.S. Provisional Application No. 60/507,516 filed on October 2, 2003. Accordingly, the April 7, 2003 priority date of the pending application is earlier than the October 2, 2003 earliest priority date of Bolin. For this reason, Bolin is not available as prior art which may be used in a 35 U.S.C. § 103(a) rejection.

Accordingly, while the Applicants appreciate the removal of Gebara, the Applicants again request that Bolin also be removed.

35 U.S.C. 103(a) – Nicholls in view of Marsh

Claims 1-2, 10-17, 25-33 and 42 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 7,058,368 (“Nicholls”) in view of U.S. Patent No. 6,539,204 (“Marsh”). Applicants respectfully traverse this art grounds of rejection.

1. Nicholls teaches away from incorporating the features alleged to be taught by Marsh.

Nicholls is directed to an adaptive feedforward noise cancellation circuit that attempts to reduce interference caused by amplified transmissions of a transmitter at a transceiver feeding back to a receiver of the transceiver (e.g., Nicholls, Abstract). Accordingly, in Nicholls, (i) an interfering signal or noise is sampled, (ii) a cancellation signal is generated based on the sampled interfering signal and (iii) the cancellation signal is applied to the receive path to cancel the interference signal (e.g., see Col. 3, lines 53-63 of Nicholls). Nicholls makes it very clear applying the cancellation signal to the receive path, and not the transmit path, is an important aspect of the invention. For example, Nicholls states the following:

Advantageously, interference in the received signal caused by transmission of the amplified signal at the receive frequency is readily cancelled without introducing noise cancellation signals into the receive path. Furthermore, since the cancellation is conducted in the transmit path, there is no receive path noise figure associated with the noise cancellation system. Also the noise cancellation system can operate in the receive band without adversely affecting the desired receive path signal since the noise is cancelled in the transmit path rather than in the receive path.

(e.g., see Col 3, lines 53-63 of Nicholls, Emphasis added)

Applicants believe that the emphasized portion of Nicholls from above constitutes a clear teaching away from inserting the cancellation signal into the receive path, since Nicholls enumerates many advantages associated with inserting the cancellation into the transmit path only. Accordingly, even assuming for the moment that the secondary reference of Marsh disclosed canceling an interference signal on a receive path, Applicants submit that in view of the clear teaching away from this implementation present in Nicholls, one of ordinary skill in the art would not seek to insert a cancellation signal on the receive path as opposed to the transmit path because Nicholls disparages such an approach.

Turning to the claims, independent claim 1, for example, recites “combining the adjusted signal with the receive signal path including the leakage signal, to form a combined signal so as to cancel the leakage signal” (Emphasis added). The emphasized-portion of claim 1 appears to recite a feature that is specifically taught away from in Nicholls, because Nicholls clearly is directed to combining a cancellation signal with the transmit path and not the receive path.

Applicants agree with the Examiner in that Nicholls fails to disclose or suggest the “adjusting” and/or “combining” limitations of independent claims 1, 16, 32 and 42 (e.g., Page 3 of the 2/05/2010 Office Action). However, the Examiner cites to Marsh and alleges that Marsh discloses these particular deficiencies of Nicholls. *Id.*

Marsh is directed to an analog active cancellation of a wireless coupled transmit signal whereby a model of a signal transmitted by a local transmitter is provided to an active cancellation device (e.g., Marsh, Abstract). The active cancellation devices generates a cancellation signal of this signal and provides the cancellation to a local receiver so that the local receiver can remove the interference from the transmitter signal and better receive signals transmitted by remote devices. *Id.*

Clearly, Marsh and Nicholls are directed to very different approaches for interference cancellation. Marsh teaches cancellation performed on the receive path, whereas Nicholls teaches that it is much more efficient to cancel the interference on the transmit path so that the receive path is never interfered with in the first place.

Applicants respectfully submit that Nicholls clear teaching away from applying the cancellation to the receive path would outweigh Marsh's teachings because (i) Nicholls is filed two (2) years after Marsh and represents more recent thinking regarding interference cancellation, (ii) Nicholls clearly considers the possibility of injecting cancellation signals on the receive path but then discounts such an implementation as being inferior to a transmit path-injected signal and (iii) Marsh is primary directed to a transmitter/receiver pair that uses the same frequency, whereas both the claims and Nicholls are directed to different frequencies being allocated to the receive and transmit paths.

Regarding (iii), the Applicants note that Nicholls teaches away from canceling on the receive path in part due to its use of multiple frequencies. Thus, it is questionable whether Marsh's teachings would be able to carry over to Nicholls' system, because Marsh is clearly directed to a system that uses the same frequency on both the transmit and receive paths. For example, Marsh states "[t]he present invention reduces the noise effects of a transmitter located in close proximity to a receiver. Using various embodiments of the present invention, a wireless device can simultaneously transmit and receive, even within the same frequency band." (e.g., see Col. 3, lines 22-35 of Marsh).

For the reasons discussed above, the Applicants respectfully submit that one of ordinary skill in the art would not have a rationale to modify Nicholls based on Marsh to arrive at a

Applicants respectfully request that the Examiner withdraw this art grounds of rejection.

2. Dependent claims 2, 17 and 33 are allowable for additional reasons.

Dependent claims 2, 17 and 33 recite “wherein the single wireless device includes a frequency translating repeater.” While Marsh and Nicholls are clearly directed to wireless transceivers, it will be appreciated that not all wireless transceivers are configured to operate as frequency translating repeaters. Frequency translating repeaters receiving a given signal on a first frequency and re-transmit the given signal on a second frequency. No such operation appears to be disclosed or suggested by Marsh and/or Nicholls. For at least this additional reason, Applicants respectfully request an indication of allowance for claims 2, 17 and 33, as well as the claims dependent thereon.

Further, with specific reference to Marsh, the Applicants note that Marsh is primarily directed to canceling interference between co-located transmitter/receiver pair that are operating on the same frequency. For example, Marsh disparages using multiple frequencies by stating “[a] cellular phone isolates its transmitter from its receiver by using two different frequency bands--one band for transmitting and one band for receiving ... [n]one of these isolation solutions are particularly satisfying” and “[f]ull duplex communications that rely on two isolated frequency bands for sending and receiving data have the obvious disadvantage of using twice as much frequency bandwidth as half duplex communications”. Then, Marsh states “[t]he present invention reduces the noise effects of a transmitter located in close proximity to a receiver. Using various embodiments of the present invention, a wireless device can simultaneously transmit and receive, even within the same frequency band.” (e.g., see Col. 2, lines 3-25 of Marsh). Clearly, Marsh is directing one of ordinary skill in the art to use its teaching with a same-frequency environment. For example, see claim 2 of Marsh and also “[t]he present invention reduces the noise effects of a transmitter located in close proximity to a receiver. Using various embodiments of the present invention, a wireless device can simultaneously transmit and receive, even within the same frequency band.” (e.g., see Col. 3, lines 22-35 of Marsh). This would appear to teach away from implementing Marsh’s teachings within a repeater that already isolates the receive path from the transmit path by associated each with a different frequency, as in a frequency translating repeater.

Applicants respectfully submit that claims 2, 17 and 33 are allowable over the combination of Marsh and Nicholls for at least these additional reasons.

35 U.S.C. 103(a) – Nicholls in view of Marsh in further view of Bolin

Claims 3-5, 18-20, 34-36 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 7,058,368 (“Nicholls”) in view of U.S. Patent No. 6,539,204 (“Marsh”) in further view of U.S. Patent No. 7,194,275 (“Bolin”). Applicants respectfully traverse this art grounds of rejection.

As an initial matter, it is the Applicants’ understanding that the Examiner intended to apply Marsh in this section, and not Gebara which was previously removed. This is corroborated by the Examiner’s references to Marsh, and not Gebara, in the argument section related to this rejection on Pages 12-13 of the 2/05/2010 Office Action. However, in the 2/05/2010 Office Action, this rejection is introduced with a citation to Gebara instead of Marsh (e.g., see Page 12 of the 2/05/2010 Office Action). The Applicants believe this to be the result of a typographical error but request that the Examiner clarify this section in the next Office Action.

Further, as set forth on Page 10 of the 11/11/2009 response by the Applicants, Bolin was filed as a non-provisional application on September 30, 2004, and claims priority to U.S. Provisional Application No. 60/507,516 filed on October 2, 2003. Accordingly, the April 7, 2003 priority date of the pending application is earlier than the October 2, 2003 earliest priority date of Bolin. For this reason, Bolin is not available as prior art which may be used in a 35 U.S.C. § 103(a) rejection.

Because Bolin cannot be used as prior art against the pending application, Applicants respectfully request that the Examiner withdraw this art grounds of rejection.

CONCLUSION

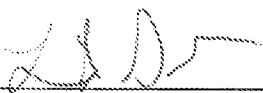
It is believed that all of the pending claims have been addressed in this paper. However, failure to address a specific rejection, issue, or comment, does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above are not intended to be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

In light of the amendments contained herein, Applicants submit that the application is in condition for allowance, for which early action is requested. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026. If a fee is required for an extension of time under 37 CFR 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

Dated: 5/4/10

By: 
Linda G. Gunderson, Ph.D.
Reg. No. 46341

QUALCOMM Incorporated
Attn: Patent Department
5775 Morehouse Drive
San Diego, California 92121-1714
Telephone: (858) 651-7351
Facsimile: (858) 658-2502